

CLAIMS

What is claimed is:

1. A writing device for performing writing with respect to color electronic paper which includes a microcapsule layer having microcapsules, whose colors change depending upon a direction of an electric field, arranged therein in a planar shape, the microcapsule layer including three types of microcapsules which are formed so as to be capable of displaying one color among three predetermined primary colors, respectively, the writing device for color electronic paper comprising:

a writing head which has pixel electrodes and a counter electrode, which are arranged to be opposed to each other across the microcapsule layer, and performs electric field formation for each of the pixel electrodes with respect to the microcapsule layer according to image data;

a color arrangement detector which detects an arrangement of the three types of microcapsules in the microcapsule layer; and

an electric field controller which controls the electric field formation for each of the pixel electrodes on the basis of a result of the color arrangement detection by the color arrangement detector.

2. The writing device for color electronic paper according to claim 1, wherein the color arrangement detector comprises a photodetector which detects reflected light from the microcapsules of the electronic paper via the writing head, and

members of the writing head, which are arranged further on the

photodetector side than the electronic paper, are optically transparent members capable of transmitting the reflected light.

3. The writing device for color electronic paper according to claim 2, wherein the color arrangement detector comprises a light-irradiating device which individually irradiates light of at least two colors among the three primary colors on the microcapsules of the electronic paper.

4. A writing device for color electronic paper which applies a voltage to color electronic paper with respective pixels formed of a plurality of encapsulating regions, which encapsulate charged particles or dispersion media colored in any one of a plurality of predetermined colors, and displays the color of the charged particles or dispersion media, which are encapsulated in the plurality of encapsulating regions, on a display surface, the writing device for color electronic paper comprising:

a first voltage applicator which applies a voltage to a predetermined region of the color electronic paper such that all the encapsulating regions in the predetermined region come into a color developed state;

a color detector which detects which color of the plurality of colors is a color displayed on the display surface of the predetermined region when the voltage is applied by the first voltage applicator; and

a second voltage applicator which applies a voltage to the predetermined region so as to control the color developed state of the respective encapsulating regions in the predetermined region on the basis of colors of respective pixels forming a display image, which is displayed in the

predetermined region, and a result of detection of the color detector.

5. The writing device for color electronic paper according to claim 4, wherein the first voltage applicator, the color detector, and the second voltage applicator are in this order.

6. The writing device for color electronic paper according to claim 5, wherein a plurality of stripe regions are formed of a plurality of encapsulating regions which encapsulate common colored charged particles or dispersion media of a plurality of colors, and

the first voltage applicator, the color detector, and the second voltage applicator are along a direction perpendicular to a longitudinal direction of the stripe regions.

7. The writing device for color electronic paper according to claim 5, wherein a plurality of stripe regions are formed of a plurality of common colored encapsulating regions which encapsulate charged particles or dispersion media of a plurality of colors, and

the first voltage applicator, the color detector, and the second voltage applicator are along a longitudinal direction of the stripe regions.

8. A writing method for color electronic paper which applies a voltage to color electronic paper with respective pixels formed of a plurality of encapsulating regions, which encapsulate charged particles or dispersion media colored in any one of a plurality of predetermined colors, and displays

the color of the charged particles or dispersion media, which are encapsulated in the plurality of encapsulating regions, on a display surface, the writing method for color electronic paper comprising:

applying a voltage to a predetermined region of the color electronic paper such that all the encapsulating regions in the predetermined region come into a color developed state;

detecting which color of the plurality of colors is displayed on the display surface of the predetermined region when the voltage is applied; and

applying a voltage to the predetermined region so as to control the color developed state of the respective encapsulating regions in the predetermined region on the basis of a result of the detection and colors of respective pixels forming a display image, which is displayed in the predetermined region.